NARRATIVE REPORT

PISHKUN, WILLOW CREEK, & BENTON LAKE

NATIONAL WILDLIFE REFUGES

May 1 to August 31, 1942

1. GENERAL

A. Weather Conditions

Month.	Snowfall	Precipitation	Max. Temp.	Min. Temp.
May	11.0	4.99	82	35
June	----	2.04	78	33
July	----	.95	91	39
August	----	.22	94	35
Totals	11.0	8.20		

The above weather data was taken from the United States Weather Bureau Station maintained in connection with the County Extension Office at Choteau, Montana.

Past records show that we had no snow during this four month period for 1940 and 1941. During this same period, precipitation for 1940 was 4.70 inches and for 1941, 7.03 inches, as compared with 8.20 inches for 1942. 7.03 inches of the 8.20 inches fell during May and June.

Maximum and minimum temperatures averaged considerably lower than during the past two years. Every month the highest maximum and the lowest minimum temperature for the four month period of 1940 and 1941 was higher than for the same period of 1942. The average maximum and minimum temperature for this period of 1942 was 65.58 and 44.05 respectively as compared with 76.02 and 45.60 for 1941 and 79.54 and 44.84 for 1940. In other words, daytime temperatures for 1940 averaged 14 degrees per day warmer during May, June, July, and August than they did during the same period for 1942.

B. Water Conditions.

1. (General)

Because of an unusually large amount of snow during the winter and spring months which melted very rapidly during April and May, causing extremely high runoffs, and because of rains high above normal during May, all lakes, ponds, and potholes which have been dry for 20 years or more filled up to overflow stage. Many of these still contained a considerable amount of water at the end of August.

2. (Pishkun)

Pishkun has maintained a fairly constant level throughout the entire period. By May 16, the water level of this lake had reached

4371.4 which was the highest level reached during the period. Lowest level was 4354.8 on July 25. Pishkun has very little if any natural drainage area, and the level of the lake is dependent entirely upon storage of water behind the Gibson Dam in Sun River Canyon. Runoff into Gibson Lake this year was sufficient to maintain a full head in the canal feeding Pishkun Lake. The outlet canal from Pishkun however carries about 500 feet more water than does the inlet canal, so during the irrigation season even though the inlet canal is running a full head waterlevels are always going down. The drop is more rapid and prolonged during July and August if the season is unusually dry.

3. (Willow Creek.)

Willow Creek Reservoir has really made history for itself this year although the high stage which it reached this year may have caused some damage to birds which may have nested in the dry lake bed during the earlier part of the season.

On May first the water level was up to 4110., and on August 31 it had reached 4127.4. This is the highest stage this reservoir has reached for quite a number of years. The highest runoff by far was during June. During June the level of the reservoir raised from 4114.0 to 4125.4. During this period snows were melting in the mountains and "Willow Creek" according to local ranchers, was carrying more water than they had ever noted before. Willow Creek Reservoir has a natural drainage area of about 100 square miles all of which is mountainous or foothill area.

During 1941 a supplementary feeder canal was constructed for Willow Creek Reservoir. This diverted out of the Pishkun Canal at the mouth of Sun River Canyon. The Reclamation Service did not use this canal this spring however as it had not previously been primed and too much water would have been wasted through seepage before it reached the reservoir. Thus all water flowing into Willow Creek Reservoir this year has been from natural runoffs. On May first 1941, the level of the reservoir was at 4101.5. Because of construction work on the dikes the water was allowed to drain out of the reservoir during May, and up to about July 15. From July 15 to August 31 it had raised from zero (4085) to 4093.

4. (Benton Lake.)

Benton Lake continued to rise throughout all of May and the fore part of June. When I visited this area on June 4, entrance in the refuge could only be made on foot or horseback. On this date I borrowed a saddlehorse from the Hinderager ranch and in going over the hay areas on the extreme west end of the refuge I found that they were all completely flooded. This area is about two miles west of the lake bed proper. When accompaning Mr. Mushbach to this area again on June 12 we found that the level of the lake had been receeding but about 2500 acres still remained under water. The water in this lake has been going down continuously since June 12 and by the end of August there was only about 100 acres covered.

C. Fires

Because of an abundance of rainfall during May and June, grasslands throughout all of this section of the country did very well and grass obtained a good growth where it was not grazed off. Due to very little precipitation during July and August, grasslands became dry and the fire danger from lightning was very serious. Several grass fires was started by lightning in different localities of this section. We had only one small fire however on the refuges in this area. On July 29, lightning set fire to the grass at Benton Lake and burned over an area of about 80 acres. The damages however were none at all as the area burned over contained only a very heavy growth of Foxtail, which is considered worthless either as hay or for grazing. The fire was discovered by farmers surrounding the area and was completely extinguished in about two hours.

11. WILDLIFE

A. Migratory Birds.

1. Waterfowl: (Pishkun)

In past narrative reports counts on waterfowl populations, both migration and nesting, have always included those birds found in the easement area joining the Pishkun Refuge. Since an executive order has never been signed on this easement area, and since the tire and mileage problem has been so acute this summer, no observations have been made in the easement area. Always in the past about 80 percent of the birds counted in this area, especially throughout the nesting season, have been counted in the easement area. Therefore populations at Pishkun will look very small in comparison with other years.

Only a very few broods of young ducks were noted in the large lake during the earlier part of the brooding season. In the two fenced in nesting areas and in the several small seepage ponds below the western dams of the main reservoir, broods of young ducks were more numerous. On several occasions as many as 40 broods of ducks were noted in the two nesting areas and on three of the other small ponds. These consisted of Mallards, Pintails, Shoveller, Gadwall, Baldpate, Blue-winged Teal, Canvas-back, Redhead, and Ruddies. On June 10, twenty-six pairs of ducks were noted in the south nesting area. On July 31, ninty-seven ducks, sixty-two of which were juveniles were counted on one of the lakes of this nesting area. No large rafts of ducks were noted on Pishkun proper during the period covered by this report, however there were approximately 150 to 200 Ruddies scattered in amongst about 500 Horned Grebes on May 9th. The last time this raft was noted was on May 16th.

On May 8th., five Whistling Swan spent the day sleeping and feeding in the lake of the south nesting area. These birds left the refuge going north at 8:45 p.m. This has been the only ob-

Form NR-1

MIGRATORY BIRDS

Refuge Pishkun Months of May to Aug., 1942

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Estimated Total	Number Using Refuge
Common Loon			May 16	40	May 16						40
Holboell's Grebe	~~May~~ 4	May 2	May 16	23	May 16			5	4	20	43
Horned Grebe	~~50~~		May 9	500	May 9			4	6	24	500
Western Grebe			May 16	62	May 16	~~Jan~~ 3	June 1	none noted			62
Pied-billed Grebe	6	May 9	June 2	30	June 2			2	6	12	42
White Pelican 125	11	Aug. 3	Aug. 10	50	Aug. 25						50
Double Crested Cormorant 20	3	Aug. 31				3	Aug. 31				3
Great Blue Heron 194	5	May 9	May 16	32	June 2						32
Whistling 180						5	May 8				5
Common Mallard 132				250	Aug. 22			27	8	250	~~350~~
Gadwall 135	11	May 2	May 16	200	~~May 16~~			2	6	12	200

REMARKS: (Pertinent information not specifically requested)

Form NR-1

MIGRATORY BIRDS

Refuge Pishkun Months of May to Aug., 1942

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Estimated Total	Number Using Refuge
143 American Pintail								11	7	77	175
140 Blue-Winged Teal								4	6	24	50
Shoveller 142								3	8	24	35
~~Baldpate~~ 137								1	7	7	20
Redhead 146								2	7	14	25
Canvasback 147											50
Lesser Scaup 149											
~~American~~ Goldeneye 151						~~May~~ 12	May 9				
~~European~~ Goldeneye 153						June 2	3				
Buffle-head 153											
Ruddy Duck 167			May 9	~~150~~	May 9			4	5	20	175
American Merganser 129			May 9	72	June 2						200
Turkey Vulture 325	~~July~~	July 6				~~July~~	July 6				1

REMARKS: (Pertinent information not specifically requested)

Form NR-1

MIGRATORY BIRDS

Refuge Pixley Months of May to Aug., 1942

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Sharp-shinned Hawk	332										
Cooper's Hawk	333										
Swainson's Hawk	342										
Golden Eagle	349										
Marsh Hawk	331										
American Coot	221										
Killdeer	273										
Long-billed Curlew	264										
Baird's Sandpiper	241										
Northern Phalarope	223										
California Gull	53										
Franklin's Gull	59										
Black Tern	774										

REMARKS: (Pertinent information not specifically requested)

Prairie Horned Larks 474b
N. Cliff Swallow 612
American Magpie 475
Western Crow 488
Western Robin 761
Western Bluebird 767
Western Meadow Lark 501
Yellow Headed Blackbird 497
Red-wing Blackbird 498
Brewer's Blackbird 510
Cowbird 496
Lark Bunting 605
Western Savanah Sparrow 542
" Vesper " 540

Mishkun May Augus t 2

Whistling Swan					5	May 8				5
Great Blue Heron		May 16	38	June 2						38
American Coot		May 9					6	9	60	200
Northern Phalarope	32	May 16 June 2	65	June 2	9	July 23				100
Long-billed Curlew		May 9	44	June 9	65	Aug. 3	7	3	21	65
Killdeer										30
Marsh Hawk										7
Sharp-shinned Hawk	1	July 23								1
Coopers Hawk	2	Aug.3								2
Swainsons Hawk	2	June 2								2
Golden Eagle	2	May 16								2
Prairie Horned Lark	Common throughout all of period									Approx. 1000
American Magpie	5 or 6 birds have been noted occasionally but are notresidents of the refuge.									6
Western Crow		May 9	30	Aug. 3	30	Aug. 3				30
Cowbird	) These birds have been residents of the nesting areas throughout									200
Yellow-headed Blackbird	) all of the period. Although I have not specifically noted any nests									100
Red-wing Blackbird	) I am positive that these birds nested in and around the reeds and rushes									150
Western Meadow Lark	) of the lakes and in the tall grasses of the nesting areas.									100
Brewers Blackbird	)									300
Western Vesper Sparrow	)									Numerous
Western Savanah Sparrow	)									Numerous
Lark Bunting	)									100
Northern Cliff Swallow	35	June 2	June 15	300	June 24		4	4	16	400
Western Robin	1	June 2								1
Western Bluebird	2	June 2								2

servation of Swan since April 10th.

(Willow Creek)

Observations of waterfowl at Willow Creek Refuge have also been much more fewer this year than during past years. No visits were made to Willow Creek during May. When visiting this area on June 6th., I found the waters of the refuge all very muddy because of heavy rains and highwaters and only a very few ducks were noted. These were mostly American Goldeneye, Mallards, and Pintails. On June 11th. when I visited this area with Mr. Mushbach we noted about 150 nesting ducks on the reservoir, also 1 brood of Mallards and 1 of American Goldeneye. On June 30th, 37 broods of young ducks were noted, consisting of Mallards, Pintails, Shovellers, and the one brood of Goldeneye noted on June 11th. On July 9th, I noted 69 broods and on July 15th. I counted approximately 600 young ducks, and 400 adults. Many young ducks not quite large enough to fly were noted out in the grass several hundred yards from the water. One adult Mallard drake was also noted freshly killed by a Rough-legged Hawk.

Because of mileage allotments, no visits were again made to Willow Creek until August 27th. At this time I noted about 5160 birds on the reservoir and in the creek, about 4000 of which were ducks. By this time many of the smaller ponds in the surrounding areas where ducks had hatched were now dried up and ducks are beginning to congregate on the larger bodies of water. I estimated that at least 75 per cent of the ducks noted at this time were juveniles.

(Benton Lake)

Ducks were much more numerous at Benton Lake Refuge this year than they were at Pishkun and Willow Creek combined. Due to the very wide spread of the water during the earlier part of the nesting season, and the tall grasses growing from a quarter to a half mile out all along the shore line, much difficulty was had in trying to get a fairly accurate estimate on the number of nesting birds in the area.

Many Mallard nests were discovered by farmers all around the outside of the refuge. On May 7th. I was told by one farmer that he had plowed around 3 nests that day and had moved two others that he didnt see in time. On this date I was almost positive that I could hear Snow Geese on the lake but I could not locate them because of the high grasses. On June 4th. I borrowed a saddle horse from the Hinderager ranch on the northwest corner of the refuge and spent the larger part of the day riding around the water areas. At this time all of the northwestern portion of the refuge as well as the lake bed proper was under water. Ducks were flushed up out of the grass all over the area and I estimated that there were at least 10,000 nesting ducks on the refuge at this time. These consisted of Mallards, Pintails,

Shovellers, Blue-winged Teal, Baldpates, and Gadwalls. No young ducks were yet noted however I was told by Carl Finderager that he had noted a few broods farther up along the creek to the west. On this visit to Benton Lake (June 4) I also noted that Avocets, Jack Snipes, Killdeer, Black Terns, Lark Buntings, and Red-winged Blackbirds were very numerous. All of these birds were flying and milling around much of the time almost within hands reach of my head and were acting as though they all had nests in the immediate vicinity. A few American Coots were also noted and on July 7th. one Coot nest with 14 eggs was located in a slough area of the refuge. No other nests were located at this time although young ducks, some very small and others about half grown were all over in the tall grasses along the shore line. On July 29th. I noted one juvenile American Bittern, about half grown, along the southeast shore of the lake. Also on July 29. I banded one juvenile Blue-winged Teal, (Band No. 629002) and one juvenile Shoveller (band no. 629003).

2. Other Waterbirds and Shorebirds. (Pishkun)

Common Loons have remained on the refuge throughout all of the nesting season. At times I have noted as many as 40 of these birds on the large lake at Pishkun. Arrival of these birds is usually early in April, and they remain all through the summer and fall months, yet I have never found a loon nest or seen any young on the lake, and I have never saw one in flight around the lake, although I have been within 50 yards of them many times while they were feeding close in to shore.

During May and the fore part of June, Horned Grebes were present at Pishkun in quite large numbers, about 500 being the most noted. These were in one large raft and most always noted far out towards the middle of the lake. Sometimes the raft seemed broken up and Horned Grebes would then be noted in most all portions of the lake along the shore line. Throughout the latter part of June, and all of July and August only a very few of these Grebes have been noted. Western Grebes were noted throughout May and June, but none remained to nest on the refuge. Six pair of Hobboell's Grebes nested at Pishkun this year. As previous years, these nests were found floating close to the shore in both of the fenced nesting areas at Pishkun. Two of these nests in the north nesting area did not float out as the water receeded, the bulrushes in the area held the nests fast. These rushes were entirely under water when the nests were first built. I know definitely that eggs in five of these nests were hatched as I noted the juveniles with the adult birds. Pied-billed Grebes were noted in pairs or singles throughout all of the period. No nests were located but juvenile birds were noted during July and August.

White Pelican ranging in numbers from 3 to 50 were noted at Pishkun every day throughout August. It seemed as though these birds came in early in the morning and left again at night. I believe these birds spent the night at Willow Creek.

California Gulls were residents of the refuge during the entire 4 months of the period. These birds nested on the Split Rock Lakes 1 mile southwest of Fishkun but done most all of their feeding around the shores of the Fishkun Reservoir. Franklins Gulls were noted only in Migration. Black Terns Were also noted only in migration. Great Blue Herons were seen feeding along the shores of Fishkun every day. These birds nested in the trees along Sun River 4 miles away.

American Coot although not near as numerous as in previous years remained on the refuge all summer and a few nests were noted in the nesting areas. Quite a number of these birds also nested in the Split Rock Lakes area.

Northern Phalarope and Bairds Sandpipers were noted only in migration.

Long-billed Curlew are very common throughout the entire area and nests can be found almost any place where water is close at hand. After the nesting season is over and the young are big enough to fly these birds are noted in flocks numbering as many as 50 or 60 birds. I have noted flocks like this several times at Fishkun during the later part of July and first part of August.

Prairie Horned Larks, Cowbirds, Blackbirds, Meadow Larks, Western Vesper and Savanah Sparrows, and Lark Buntings were quite numerous all summer. The Cowbirds, Blackbirds, Meadow Larks, and Lark Buntings remained almost entirely around the reed lakes of the nesting areas. Northern Cliff Swallows were also very numerous along the canal banks and around the headquarters buildings. Three nests were built under the eves of the residence building, and two nests were built inside the service building.

(illow Creek)

During past years I have always noted that birds that are summer residents at Fishkun are also summer residents at Willow Creek, but are usually more numerous at Willow Creek because of the trees and brush in that area and also because of a much larger nesting area there. I have also noted that there is a much larger variety of smaller birds at Willow Creek than there is at Fishkun. I did not get a chance to observe or identify any of those smaller birds this season other than those that were readily recognized on first sight.

8 Avocets were noted at Willow Creek on August 27. These birds were not noted at Fishkun at all this season and August 27 was the first time they were noted at Willow Creek, however that was the only date I visited that refuge during August.

It is believed that the White Pelican visiting Fishkun during the daytime were really summer residents of Willow Creek, as they were often seen aproaching in the early morning hours from the direction of Willow Creek. 50 were noted at Willow Creek on August 27.

2. Food and Cover. (Pishkun)

Because of the abundance of rain during May and June, but more so due to the fact that no domestic stock excepting about 10 or 12 horses have been turned into the Pishkun area throughout the entire 4 month period, food and cover conditions are much better than they have ever been in the past. Cattle were not turned into the Pishkun area this year until about September 6th. That area however, outside the Pishkun fence in Section 9, belonging to the refuge, has been very heavily grazed throughout all of the spring and summer months. This portion of section 9 belonging to the refuge area, if fenced in with our now existing fenced nesting area joining it on the east, would add approximately 180 acres of good nesting grounds to the refuge.

The lake in the North nesting area is now entirely surrounded by large round stem bulrushes, which has contributed an abundance of nest building material and cover for Coots, Grebes, as well as ducks and smaller birds. A few years ago there was only a very small portion of this lake that had any cover at all. One of the lakes in the south nesting area is also now surrounded with bulrushes. This lake now also has a very good bed of Sago Pond Weed. Between the two lakes of the south nesting area there is a connecting water course about 300 yards long and ranging in width from about 15 to 50 yards wide. Prairie Bulrush now covers most of this water course seeded from seed stock planted two years ago. The larger lake in this nesting area is well supplied with Sago Pond Weed and Ruppia.

(Willow Creek)

Prior to this summer Willow Creek Reservoir has been better than 90 per cent dry for two years and aquatic vegetation in the lake bed has suffered accordingly. A few of the deeper holes of the lake basin that could not drain out contain good beds of Ruppia which no doubt will supply some food for diving ducks this fall, however since the water is so deep over it now I do not believe shoal water ducks will obtain much of their food supply from this source. Since cattle have been permitted to graze in the nesting area this summer they have grazed off all the Spikerushes and Bulrushes which for several years have furnished a good food supply during fall migration periods. Upland grasses have again been very heavily grazed over the entire refuge, and as a whole food and cover conditions on this refuge are not near as good as they were during 1940 and 1941.

(Benton Lake)

Food and cover conditions at Benton Lake are better by far this year than I believe they have ever been during the history of the refuge. Grasses all over the refuge are from one to two feet high and have been gradually becoming thicker from year to year. With the harvesting and combining of bumper crops of wheat in all the areas surrounding the refuge, waterfowl will be able to obtain an abundance of food throughout all the migration period this fall.

B. Upland Game Birds.

(Pishkun)

1. Population

Pintail Grouse: For the past two years Pintail Grouse have been year around residents of the easement areas joining Pishkun. This summer 31 adult birds have been noted in the easement area. One pair were seen several times during May and June in the south nesting area and during July one adult with nine young was noted in this area. Occasionally during May I noted flocks numbering from 7 to 13 birds at different points around the refuge. It is believed however that these were migrants from the easement areas or from Deep Creek two miles north of the refuge.

Hungarian Partridge: Five broods of Huns were hatched at Pishkun this year. Huns were very much more numerous along the canal and and throughout the easement areas than during past years. One nest with 15 eggs was found only about 100 yards south of the headquarters buildings, and one nest with 18 eggs was found in the fence post lot 300 yards east of the buildings. Three broods of young unable to fly were also noted in the south nesting area.

Huns have been quite common in the easement areas during the past 4 years, but last year and this year they seem to be moving further up the canal and into the refuge area. I believe the reason for this is because the Pintail Grouse are also becoming more numerous in the easement area and gradually driving the Huns further up the canal. During 1930 when Pintail Grouse began to become more numerous in the nesting area at Willow Creek I noted that they kept the Huns away from the shelters and feed boxes and that the Huns gradually disapeared from the nesting area as the Pintails increased. Although there is quite an abundance of food, cover, and nesting sites for the number of birds residing in the easement areas, I have noted this summer that the feeding sites which have usually been occupied by the Huns are really the feeding places of the Pintails now.

(Willow Creek)

Since 1929 Pintail Grouse have done very well at Willow Creek, however they seem to always use this area much more extensively during the fall, winter, and early spring months. I have never seen many Pintail Grouse in the area during the summer months, and this year I have not noted any at all however the visits to this this refuge this summer were very few.

Food and cover conditions for the coming fall and winter months will not be near as good as they have been in the past. Cattle have grazed the high upland grasses quite close over most of the fenced area, and have tramped down much of the lower cover around brush patches. Two of the shelters inside the fenced nesting area are inclosed by a second fence and the cover around the shelters have not been damaged. It is believed that a much larger supplementary feeding program will be necessary for the Grouse on the refuge this winter.

(Benton Lake)

This summer is the first time that I have noted more than 2 or 3 upland game birds at a time at Benton Lake. On 2 visits to this refuge during May and June I noted 7 and 9 flocks of Hungarian Partridges averaging about 14 birds to the flock. These however were always noted within a quarter of a mile from the outside boundary of the refuge and it is believed that most of their feeding was done in the surrounding grain fields. Grass cover though is much better inside the refuge than it is on the outside and gives them much more protection from predators.

On one visit to this area during June, 7 Upland Plover were noted and from the actions of the birds they must have had nests in the immediate vicinity, although I could not locate the nests.

C. Big Game Animals

(Pishkun)

During the last two weeks of June and first two weeks of July, from 3 to 7 Antelopewere noted in the refuge area south and east of the headquarters site almost every day. Very often I have noted from 25 to 50 Antelope in the area from 3 to 7 miles east of the refuge. A very large amount of this area is summer sheep range. This year the refuge area has had no summer grazing, thus food conditions were much better throughout the summer inside the refuge than they were on the outside, and I believe the antelope used the refuge more than usual because of this reason.

The Antelope ranging on the refuge during this period were more often noted to be the older males, however two does with fawns were also seen several times. Usually along about 7 to 8 p.m. these Antelope would water in the canal just below the residence building.

D. Predators & Rodents

I do not believe that Skunks and Weasels could hardly be ~~xxxxx~~ classified as being numerous on any of the refuges in this area, although I have noted as many as 9 skunks in a distance of 3½ miles along the ~~xxx~~ shore of the reservoir, these observations always being in the evenning after dusk. Flicker-tail Gophers and field mice are very numerous on all of the refuges here. During the summer months when a bird of prey has been noted feeding on anything, in practically every case it was a gopher. Since the nesting of birds is quite limited around the shores of the main reservoirs here I do not believe that predations to nests or young birds by skunks or weasels are very sever and I believe that these predators would more than make up for the damage they might do by the number of mice they kill. Several times during the summer I have seen weasels at work getting rid of the mice in the Service Building at Pishkun.

Coyotes are very scarce at both Pishkun and Willow Creek, however this summer I have noted quite a few at Benton Lake. On

one visit to Benton Lake during May I noted three Coyotes in the tall grasses along the water edge. These coyotes were undoubtedly preying on nesting ducks. Since grass now affords such protective cover for coyotes they will likely become much more numerous here and will necessitate the effecting of a control program. Benton Lake is entirely too far away from the headquarters to patrol it against poachers during the winter months. I have had several complaints from farmers surrounding the refuge, that outsiders with hounds usually kill off the coyotes during the fur season and no one but the outsider gets the benefit from the fur. Each spring I have had to repair breakes in the fence where coyote hunters have driven through.

E. Fish

(Fishkun)

The supply of fish in the Fishkun Reservoir has always been maintained by the State Fish and Game Commission. About 5 years ago the reservoir was stocked with Silver Salmon, along with Rainbow Trout and Grayling. The salmon did not seem to do so well so has never been stocked since. From 200,000 to 300,000 fish have been planted in this reservoir each year. During May of this year 34,000 six inch Rainbow were planted.

The fish screen at the outlet of the reservoir, installed by the Bureau of Fisheries in 1939, has been doing excellent work in keeping the fish from going down the canal. This screen has never had to be cleaned since its installation.

During the past 3 to 5 years the fish in the Fishkun Reservoir do not seem to obtain the size that they did previous to that time. It use to be that many fish, infact almost all that were taken were from 5 to 12 pounds. During 1940 I know of one fish taken out of Fishkun weighing 7 pounds but since that time 3 or 3½ pounds seems to be the largest, with the average being around a pound and a half. The larger of the two lakes in the south nesting area has quite a number of fish in it. This lake has not been stocked for several years. Fish in this lake however seem to average around 5 pounds in weight. Waterlevels in this lake remain the same throughout the year and aquatic vegetation covers the bottom of the lake, thus shrimp and other aquatic fish foods are much more plentyful than they are in the main reservoir. The dead water area of the main reservoir is very deep, to deep for many kinds of aquatic vegetation, while those parts of the reservoir where water is shallow enough for vegetation to grow is only covered with water during the early spring and summer months and then drained off during the irrigation season, leaving the ground dry up again until the next spring. This is undoubtedly the reason why the fish in the main reservoir have not been obtaining as large a size as use to be common.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development. (Pishkun)

1. Headquarters,

On June 16, work was started on the installation of a water system for the headquarters site for household use and irrigation of lawn, trees and shrubs around the headquarters. A pit for a concrete septic tank was dug 12 feet out from the southeast corner of the residence building. The septic tank was constructed and a tile sewer line 54 feet long, laid from the septic tank to the outside latrine. Drainage from this latrine is very good and drainage is away from the rest of the buildings. 4 inch black iron soil pipe was used from the bathroom fixtures to the septic tank. Water lines and all plumbing fixtures were installed in the residence up to the pressure tank, and work had to be discontinued at the end of June because the pump and pressure tank had not yet been received.

Plumbing fixtures such as a toilet, lavatory, showerhead, and a large part of the water pipe and fittings were obtained from salvage material in stock at the National Bison Range. Pipe and fittings not obtainable at the Bison Range were furnished by the plumber doing the work. A concrete base and a shower stall was built in the bathroom. A plumber was employed 12 days and 1 other man for 9 days on the above work. The refuge manager also spent all his time, except 2 days which were required to obtain the material from the Bison Range, in helping with this work.

The pump and pressure tank was received on July 19, but no well pipe was included in the shipment, so work was not again started until August 24. A plumber was again hired and 3 days was required to lower 180 feet of 8" well pipe, construct a pump foundation, install pump and pressure tank and hook it up to water lines.

After 20 hours of pumping the water was turned into the residence water lines and a sample of water was sent to the State Board of Health at Helena, Montana for testing. The results of this test showed: Coliform Group, 1-cc. por. (Neg); 10-cc por. (Neg. in 5) Bacteria 37 degrees C., N. D.; Turbidity P.P.M., 250. With much continuous pumping of well since test was made the water has cleared up considerably.

2. Boundary Signs.

At the end of April 12 new boundary markers had been put up at Pishkun. During the period covered by this report all the balance of these markers but 6 have been put up, a total of 32 markers in all put up during the period. All the old posts were replaced with new posts. These posts had previously

been treated at the Bison Range before hauled to Pishkun. The tops of the posts were beveled off and painted white, and signs put on with galvanized lag screws. The old signs and posts were taken up, new holes dug 2½ feet deep and the new posts set. Directional arrows have not all yet been placed on the new posts. This work was done entirely by the refuge manager.

Since present mileage allotments have been received, this type of work will practically have to be discontinued because no other way of transporting tools and equipment around the refuge is available except by motor transportation. Mileage alloted these areas will only allow one trip to Choteau each week for the taking in and receiving of mail, and only a very occasional trip to Willow Creek and Benton Lake.

(Benton Lake)

The balance of the new boundary markers were also put up at Benton Lake during this period. In all 135 new markers were put up of which 70 were put up during the last period ending April 30. These markers just replaced the old signs and posts were not changed except where needed. Galvanized lag screws however were substituted in place of the black bolts used to fasten the old signs.

Maintenance work at Benton Lake consisted in repairing approximately 4 miles of fence along the south side of the refuge. In some instances ½ mile stretches of this fence had to be completely rebuilt with the exception of replacing the posts. Fall and winter winds had piled tumbling weeds against this fence and these weeds together with wind pressure and the weight of winter snows had broken the wires in very many places. Along another stretch of the fence the weeds had drifted over with blow dirt from a summer-fallowed field. Here extension posts had to be set along side the old posts and the two top wires dug out of the blow dirt and raised up on the posts. All of the above mentioned work was also done by the refuge manager alone.

D. Plantings.

(Pishkun)

During May, Crested Wheat Grass was planted in the lawn area around the residence building. With no other source of water supply except rain this grass done quite well during June. This grass dried out during July and August and looked like it had died completely. Only Russian Thistles and other weeds grew during this period and these had to be pulled very often or the whole headquarters site would have been covered with them. After the pumping of the well was started and water turned on the lawn it turned green again and I believe it will do very good from now on.

IV. ECONOMIC USE OF REFUGE

A. Grazing (Benton Lake)

Economic use permits for the grazing of cattle were issued to Arthur Hazeltine, Chas. Hinderager, John Hinkle, and R. R. Swan. These permits were issued for the period from August 1 to November 30. On the opening date allowed for grazing, Hazeltine, Hinderager, and Hinkle turned 117 head of cows with calves into the refuge. R. R. Swan was issued a permit for 110 head of cattle but by the end of August he had not yet turned them into the field and no word has been received from him relative to this.

Since only 117 head of cattle grazed in the refuge for only one month during the period, the degree of use could hardly be determined. This area would easily take care of 1000 head of cattle from August through November if water was available. It was noted however that the cattle in the refuge during August at least, grazed only in the grass areas recently flooded by water.

There has been no conflict at all noted between livestock and wildlife.

B. Haying

Hay permits were issued to 7 ranchers in the Benton Lake area. After sending in the down payment and receiving his permit, one of these ranchers, Lloyd Johnston, decided not to put up any hay because he had plenty to put up at home. Haying operations started about August 1st. and were still in operation August 31. Some of the hay being put up on the refuge was baled from the windrow. On August 19 I figured up the weight and sent in payment for 153.08 tons of baled hay put up by Chas. Hinderager and John Hinkle. Payment was figured on a basis of $1.00 per ton. The quality of the hay put at Benton Lake this year is very good. This is straight Bluejoint, clean on the ground, and most of which has obtained a growth of about 2 feet high, averaging from 1½ to 2 tons per acre. I would estimate that there will be approximately 500 tons of hay put this season.

V. PUBLIC RELATIONS

A. Recreational Uses.

Pishkun is the only refuge in this area which has any recreational uses. Fishing season at Pishkun usually opens on July 1st., but since this area is primarily an irrigation project it was all classified as a restricted area after we entered the war and the public was prohibited from trespassing, camping, or fishing for the duration. For this reason the recreational areas have not been used during the present period.

B. Refuge Visitors.

Official visitors at the refuge this period were Mr. Geo. E. Mushbach, National Bison Range, Moiese, Montana and Mr. A. W. Walker, Project Superintend of the Reclamation Service at Fairfield, Montana. Mr. Mushbach arrived at Pishkun on June 10 and left on June 12. The purpose of his visit was to make a general check on the refuges in this area and to contact Mr. Walker at Fairfield, relative to grazing problems at Pishkun and Willow Creek. Mr. Walker visited the Pishkun area on July 8th. for the purpose of looking over the proposed area to be fenced around the Pishkun headquarters site.

From July 1 to 3 inclusive, Mr. Archie Snyder and Family, Custodian of the Federal Building in Wisconsin Rapids, Wisconsin, visited at Pishkun. Because of the necessity to save on tires and of the closed fishing season, no other visitors of the general public visited any of these areas during this period.

Leon C. Snyder

Laborer-Patrolman

Sept. 15, 1942

Regional Office

VI. OTHER ITEMS

A.

Rock tied to east and portions of north nesting area fence at Willow Creek to keep fence anchored down when area is flooded.
4-23-42 R5-1

Snowdrifts along highway from Choteau to Fishkun, resulting from May 15 blizzard.
5-18-42 R5-2

Section of lawn and retaining wall around Fishkun Residence showing growth of crested wheatgrass, flowers and shrubs. 7-1-42 R.5-4

Bluejoint hay surrounding lake bed at Benton Lake. Note height and density of hay.
7-7-42 R5-5

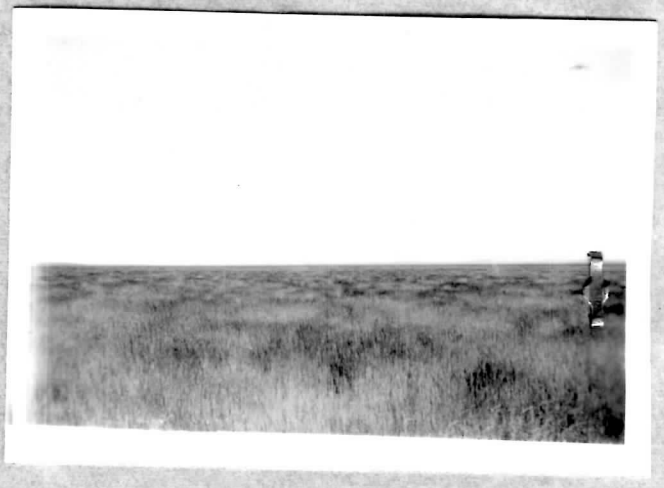
Approximately 3000 acres of the lake bed at Benton Lake is now covered with a Foxtail growth like this. This presents a real fire hazzard during critical periods. 7-7-42 R5-6

Where Bluejoint ends and Foxtail begins at Benton Lake. The Bluejoint is on the higher land.
7-7-42 R5-7

Section of lawn and retaining wall around Pishkun Residence showing growth of crested wheatgrass, flowers and shrubs. 7-1-42 R.5-4

Bluejoint hay surrounding lake bed at Benton Lake. Note height and density of hay.
7-7-42 R5-5

Approximately 3000 acres of the lake bed at Benton Lake is now covered with a Foxtail growth like this. This presents a real fire hazzard during critical periods. 7-7-42 R5-6



Where Bluejoint ends and Foxtail begins at Benton Lake. The Bluejoint is on the higher land.
7-7-42 R5-7

American Coot nest in marsh area of Benton Lake refuge. Nest containes 14 eggs.
7-7-42 R5-8

Beginning of hay bailing operations by Chas. Hinderager and John Hinkle on the Benton Lake Refuge. Hay is being picked up out of the windrow by the bailer.
7-28-42 R6-1

Arthur Hazeltine and his haying outfit used at Benton Lake. This tractor and header cut and windrowed the hay which could later either be bunched or picked up by a bailer. 7-28-42 R6-3

Close up of hay bailer used by Chas. Hinderager and John Hinkle.
7-28-42 R6-2

Header and tractor in operation cutting and windrowing hay. Benton Lake, 7-28-42 R6-4

Mr. Chris Hagnes used an old Chev. car for pushing hay up to the stack. This car has been cut down the rear axel turned over and a bullrake attached to the rear end. Benton Lake, 7-29-42 R6-5

The bullrake shown in picture number 5 has just pushed a load of hay unto this stacking unit which in turn is operated by Mr. Hagnes's pickup. Benton Lake 7-29-42 R6-6